Remarks/Arguments

1. Claims 32 – 38 and 42 – 47 are pending. Examiner rejected all claims under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a).

2. No amendments have been made to the Application.

3. **Rejection under 35 U.S.C. § 102(b):** Examiner rejected claim 32 as being anticipated by **Mohr (U.S. Patent 1,009,434)**. Mohr discloses a reflector structure in which a plurality of truncated cones are arranged to form a sphere, with the imaginary vertex of each cone pointing toward the center of the sphere. The Mohr cones are true cones, with a cone base, a cone wall, and a vertex, and the cone walls defined by straight lines that extend from the base and intersect each other at the (imaginary, since the Mohr cones are truncated cones) vertex. The arrangement of the cones in the Mohr structure, however, is such that it is impossible that "one straight line in the cone wall of a first conical element extends substantially parallel to at least one straight line in the cone wall of an adjacent conical element so as to form a straight strut between the vertexes of the first conical element and the adjacent conical element. [Emphasis added.] The Mohr cones are adjacent each other such that any straight lines of the cone wall of any two adjacent cones, which may be parallel to each other, do not and cannot form a straight strut between the two vertexes of the two adjacent cones. The cones are truncated, that is, the vertex is removed, so there can be no straight strut formed between the vertexes of two adjacent cones. For the sake of argument, we shall assume that the cones are not truncated, and do, in fact, have vertexes. In that case, the vertexes of all the cones meet at the same point in the center of the sphere. The only two cone wall lines of two adjacent cones that can possibly be parallel are the two lines that touch each other and extend from the outer edge of the sphere toward the

center, in other words, the two adjacent cones share a mutual generator line. These two lines cannot possibly form a straight strut between the vertexes. The vertexes are at the same point and, because of this, there is no distance, and hence, no line between vertexes. A point is not a straight line. It is understood that no other lines of adjacent cones are parallel, because they are necessarily radius lines that radiate out from the center of the sphere. Further, if two cones are aligned 180 degrees apart on the sphere, no lines of the two cones will be parallel with each other, because they are radius lines emanating from the center of the sphere.

4. Applicant submits that Mohr does not disclose the structure as claimed in claim 32 and requests that Examiner withdraw his rejection of this claim as being anticipated by Mohr.

5. Examiner rejected claims 32 – 38, 42, and 44 – 47 under 35 U.S.C. § 102(b) as being anticipated by **Henderson (U.S. Patent 4,794,742)**. Henderson takes great care in the specification to explain his invention, a physical multi-conic shell that is congruent to a multi-conic surface. According to Henderson, "[A] multi-conic surface is defined as a theoretical shape which is a continuous surface area composed of two or more adjacent regions, each region being a portion of the surface of a corresponding cone (called a "parent cone"), each parent cone being tangent to and oppositely oriented from an adjacent parent cone containing an adjacent region." Henderson, col. 2, lines 16 – 23. Henderson goes on to explain: "Oppositely oriented cones are cones which open (from vertex to base) in opposite directions. For example, regular (opening downward) cones are said to be oppositely oriented from inverted (opening upward) cones. Adjacent and oppositely oriented parent cones of adjacent regions are tangent along mutual generator lines which connect the vertex of one parent cone to the vertex of the

adjacent and oppositely oriented parent cone." Henderson, col. 2, lines 26 – 35.

6. Henderson explains in great detail how the dimensions and shapes of the various surface sections or surface regions are calculated. See particularly Henderson, FIGS. 7a – 7f and the corresponding text in col. 9, line 14 to col. 11, line 15. In these paragraphs, Henderson explains how a designer would calculate the position and the dimensions of the components of the multi-conic shell. FIG. 7a shows a theoretical arrangement of cones q1 – q5. This arrangement of cones is purely theoretical, because portions of two or more cones occupy the same space, that is, each cone intersects two or more other cones. It is impossible to have an actual arrangement of cones such as is shown in FIG. 7a. The actual arrangements of the surface regions are shown in FIGS. 7b – 7f and, as is plain to see, not one of the elements is a cone, nor do the elements, taken all together, form a cone. The shapes and positions of the theoretical cones in FIG. 7a are used to map out the generator lines n1 – n5, which are used to determine the shape of surface regions, but such an arrangement of cones is not constructed physically and certainly not used to create the structure disclosed by Henderson. FIGS. 7b – 7e illustrate an assembled two-dimensional panel (35) that is hoisted over a framework of beams (m1 – m5) to form a structure 39. FIGS. 7b and 7c show the surface regions 01 – 04, which were mapped out as portions of cone surfaces in FIG. 7a, It should be noted that this two-dimensional panel, when assembled, does not form a cone, but rather, forms a multi-dimensional structure, best seen in FIG. 7e, which shows the panel 35 hoisted over the support structure, to create the structure 39 as claimed. FIG. 7f is a top plane view of the structure 39. The overall shape of the structure is not that of a cone, the shapes of the individual regions 01 – 04 are not that of a cone, and the shape of the panel 35 is not that of a cone.

7. FIGS. 8a – 8f illustrate a second method of constructing two-dimensional panels 36 to be used to construct a multi-conic structure 52. Again, as with the panels and the structure described in FIGS. 7a – 7f, none of the shell regions are cones, nor is the shape of the assembled panel that of a cone.

8. FIG. 10 is an illustration of a tetrahedron within a right circular cone, shown for purposes of definition and illustration. This cone is not an element in any Henderson structure.

9. FIGS. 11a – 13a-2 are illustrations of theoretical arrays of cones. These arrays of cones appear nowhere in the Henderson structures. FIGS. 13a-1 – 13a-3 illustrate mapping out a tri-part (90), and FIGS. 13b-1 – 13b-3 illustrate mapping out a hex-part (89). The tri-parts and the hex-parts are portions of cones. FIGS. 15a – 15d illustrate hex-parts joined together. FIGS. 16 – 18 illustrate how to calculate the height of the multi-conic shell.

10. FIG. 19a – 19c-11 show roof-wall portions of a building structure which can be constructed to correspond to the theoretical array. Henderson col. 22, lines 30 – 33. The shell regions or cone segments 117 are regular tri-parts, the segments 188 are inverted tri-parts, the segments 119 regular tri-parts; the segments 120 are regular hex-parts, 212 inverted hex-parts, and 122 regular hex-parts. None of these elements is a cone, nor does the panel assembled from these segments form a cone.

11. Examiner asserts on page 3 of the Office Action that Henderson shows a structure comprising a plurality of conical elements (5a, 5b, FIG. 3). FIG. 3 does, in fact, show two cones placed on a horizontal plane. These cones are not part of the Henderson structure, however, but are shown here to illustrate a regular cone that

opens downward and an inverted cone that opens upward. This illustration is part of the definition of terms that Henderson provides. He is explaining what a cone is and how he will refer to its orientation, because he will refer to cones and their orientation frequently when describing how to calculate the cone segments that he uses to construct his multi-conic shell.

12. Examiner refers to "figure 6, 15a" as an illustration of conical elements "arranged to form a shell such that at least one straight line of the cone wall of a first conical element extends substantially parallel to at least one straight line in the cone wall of an adjacent conical element so as to form a straight strut between the vertex of the first conical element and the adjacent conical element." Examiners notation is unclear, as there is no "15a" in figure 6. There is a "15" in FIG. 5, which shows a theoretical arrangement of two cones 13 and 15. The arrangement is theoretical only and physically impossible, because the cones intersect each other, that is, a part of one theoretical cone occupies the same space as that of another theoretical cone. The regions 12 and 14 are the elements that make up the multi-conic surface 11 that will become part of the Henderson structure. Henderson, col. 7, lines 24 – 30. FIG. 6 is a further illustration of flexing and curving an originally flat surface shell 19 to obtain a shell section 19' that is congruent with sections of cones alternately oriented. The arrangement of cones, again, as with the arrangement shown in FIG. 5, is a theoretical arrangement and not a physical arrangement, as the cones intersect adjacent cones, that is, occupy the same space. Henderson, col. 7, line 62 – col. 8, line 7. If Examiner was referring to FIG. 15a with his notation "figure 6, 15a", FIG. 15a is a plan view of a theoretical array of eight parent cones that is used to calculate the position and shape of hex-parts 115a – 115e. The cones themselves are imaginary, used on paper in order to calculate size and shape of the individual elements 115. Henderson, col., 18, line 58 –

col. 19, lines 14.

13. Still on page 3 of the Office Action, Examiner refers again to FIG. 15a as showing "the conical element being a circular cone and said cone base being a circular base, the conical elements being placed in an overlapping arrangement..." FIG. 15a does not illustrate an overlapping array of circular cones. It represents a theoretical array of circular cones that is used to calculate the size, position, and shape of the various segments used in the Henderson structure. The cones themselves are not physical cones, they are not overlapping, but rather, they intersect each other, and they are certainly not used in the Henderson structure. Rather, they are a tool to design the cone segments that Henderson uses to construct the multi-conic surface, shown below in FIG. 15d. Each of the elements 115a – 115e is a flat sheet that is attached to an adjacent sheet to form the curved shape in FIG. 15d. None of the elements is a cone, nor is the multi-conic surface formed by the elements a cone.

14. On page 4 of the Office Action, Examiner asserts that Henderson discloses the elements recited in claim 35. It is not clear to Applicant whether Examiner fails to recite any text or figure in Henderson to support this assertion or relies on the reference to FIGS. 19b, 19a as support. FIGS. 19a and 19b illustrate roof-wall portions which can be constructed to correspond to a theoretical array according to Henderson. FIG. 19a is a plan view and FIG. 19b an oblique view of a Henderson structure, comprising elements 117 (regular tri-parts), 118 (inverted tri-parts), 119 (regular tri-parts), 120 (regular hex-parts), 121 (inverted hex-parts), and 122 (regular hex-parts). Henderson has defined the tri-parts and hex-parts as portions of cones. See above in section 8 of this paper. These portions of cones are not cones. They do not have a cone base, and therefore, cannot have a vertex, the vertex in a circular cone being situated opposite the

base. There are no overlapping conical elements. Not being cones, there are no struts, which are defined in claim 32 of the present application as being straight lines of a cone wall that extend from the cone base to the vertex.

15. Claim 32 of the present application claims a structure made of "conical elements." The conical elements are clearly defined in the specification as cones. The claim recites various features of the conical elements, each conical element having a cone base, a cone wall and a vertex. Applicant submits that Henderson does not disclose a structure made of conical elements as claimed in the present application. The elements in the Henderson structure are not conical elements, but rather, flat panels that are fastened to each other so as to form a structure with multiple peaks, none of which are cones, but rather, are <u>segments of cones</u>. Because the Henderson structure does not comprise such conical elements as claimed in claim 32, the reference cannot anticipate the structure as claimed in the present application.

16. Applicant requests that Examiner withdraw his rejection under 35 U.S.C. § 102(b.

17. **Rejection under 35 U.S.C. § 103(a):** Examiner rejected claim 43 as being unpatentable over Henderson in view of Farnsworth III (3 841 039). Examiner asserts that Farnsworth III discloses a structure in which conical elements are arranged in an alternating pattern and refers to elements 31, 32. Elements 31, 32 (FIG. 5) are cone shaped elements that are <u>not</u> arranged alternatingly. Rather, each of them is arranged with their vertex pointing to the center of the sphere or cube.

18. In order to render a claimed invention obvious, the combination of cited references must disclose or suggest each and every element of the claim. As discussed above in detail, Henderson does not show all the claimed limitations except

for two groups of conical elements arranged alternatingly. Henderson does not disclose a structure comprised of conical elements at all, and Farnsworth does not disclose an alternating arrangement of two groups of conical elements.

19. Applicant submits that the cited references, alone or in combination, do not disclose each limitation of the claimed invention and accordingly requests that Examiner withdraw his rejection of claim 43 under 35 U.S.C. § 103(a).

20. Applicant has successfully traversed each and every rejection raised by Examiner and now requests that Examiner allow all currently pending claims.

Respectfully submitted,

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Date: April 12, 2006

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